

## DESCRIPTION

IAP20 Rec'd PCT/PTO 13 APR 2006

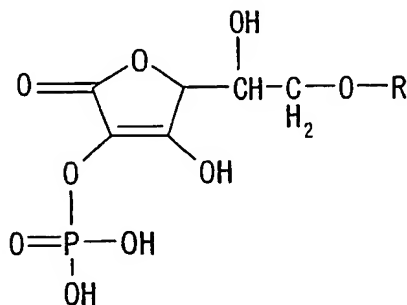
Agent for skin external use containing salt of ascorbic acid  
derivative, method for stabilizing the agent for skin external  
5 use, and stabilizer

## REFERENCE TO RELATED APPLICATIONS

This application is an application filed under 35 U.S.C.  
§111(a) claiming benefit pursuant to 35 U.S.C. §119(e) of the  
10 filing dates of Provisional Application No. 60/512,857 filed on  
October 22, 2003 and 60/567,527 filed on May 4, 2004 pursuant  
to 35 U.S.C. §111(b).

## FIELD OF THE INVENTION

15 The present invention relates to an agent for skin  
external use and a cosmetic each of which contains a salt of  
an ascorbic acid derivative and has excellent stability, said  
ascorbic acid derivative being represented by the following  
formula (1):



wherein R is a higher fatty acid residual group.

The present invention also relates to a method for stabilizing the agent for skin external use containing a salt of an ascorbic acid derivative, and a stabilizer.

5

#### BACKGROUND OF THE INVENTION

Ascorbic acid and its various derivatives are known as compounds exhibiting efficacy and effects in whitening action, anti-oxidant action, collagen synthesis promotion action, etc.,  
10 and they are contained in medicines, cosmetics, feeds and the like.

Of the ascorbic acid derivatives, compounds wherein a hydroxyl group at the 2-position is esterified with phosphoric acid and a hydroxyl group at the 6-position is esterified with  
15 a higher fatty acid and their salts are hardly oxidized and are stable and amphipathic. Therefore, these compounds have good affinity for living organisms and rapidly penetrate into the organism tissues such as the skin, so that application to medicines, cosmetics, feeds, etc. is expected.

20 However, when agents for skin external use are prepared using the salts of higher fatty acid esters of ascorbic acid-2-phosphoric acid ester, decomposition of these compounds takes place in the resulting agents, and besides, turbidity or precipitation occurs with time, resulting in a problem of

markedly impaired appearance.

In connection with the above, there has been disclosed a whitening agent for skin external use, which is improved in the stability by allowing cyclodextrin to include ascorbic acid  
5 or a higher fatty acid ester of ascorbic acid and which uses a polyhydric alcohol as a solvent (Japanese Patent Laid-open Publication No. 113525/1996). In Japanese Patent Laid-open Publication No. 113525/1996, however, there is no description about an agent for skin external use which uses a higher fatty  
10 acid ester of ascorbic acid-2-phosphoric acid ester or its salt.

In Japanese Patent Laid-open Publication No. 348228/2002, there is disclosed a composition for skin external use in which ascorbic acid, its ester derivatives, its ether derivatives or their salts are kept in a stable state in aqueous media composed  
15 of water and glycol ethers. In this document, however, there is no description about an agent for skin external use which uses a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester.

In Japanese Patent Laid-open Publication No. 3330/2002,  
20 there is disclosed a cosmetic which comprises a water-soluble ascorbic acid derivative, such as ascorbic acid phosphoric acid ester magnesium salt, water and 1,2-alkanediol and is stable in spite of passage of time. In this document, however, there is no description about an agent for skin external use which

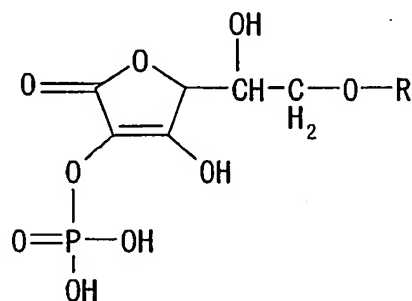
uses a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester.

Further, the present inventors have already proposed an agent for skin external use and a cosmetic in Japanese Patent  
5 Laid-open Publication No. 176217/2003. This agent for skin external use contains a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester and has been adjusted to pH 7 to 9 to inhibit decomposition of the salt in the agent and thereby improve stability and solubility.

10 In the working example in this patent document, a lotion obtained by adding 10% by mass of propylene glycol to an agent for skin external use containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester is disclosed, and it is described that decomposition of the salt of higher  
15 fatty acid ester of ascorbic acid-2-phosphoric acid ester is inhibited. In this lotion, however, occurrence of turbidity could not be inhibited though decomposition of the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester could be inhibited. Accordingly, from the viewpoint of  
20 practical use of an agent for skin external use containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester, development of an agent for skin external use which is more effectively prevented from occurrence of turbidity or precipitation with time is still eagerly desired.

## DISCLOSURE OF THE INVENTION

It is an object of the present invention to provide an agent for skin external use and a cosmetic each of which is enhanced in the stability (regarding to occurrence of turbidity or precipitation with time), containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester, said higher fatty acid ester of ascorbic acid-2-phosphoric acid ester being one of ascorbic acid derivatives and represented  
10 by the following formula (1):



Formula (1)

wherein R is a higher fatty acid residual group.

It is also an object of the present invention to provide, through provision of such an agent for skin external use as mentioned above, a method for stabilizing the agent for skin  
15 external use containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester and a stabilizer for the agent for skin external use.

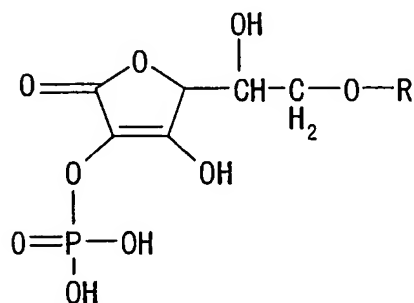
Under such circumstances as described above, the present  
20 inventors have earnestly studied, and as a result, they have

found that an agent for skin external use which is effectively prevented from occurrence of turbidity or precipitation with time can be provided by allowing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester and a polyhydric alcohol to be present together, preferably by allowing the salt and a specific amount of a specific polyhydric alcohol to be present together. Based on the finding, the present invention has been accomplished.

That is to say, the present invention relates to the following matters.

(1) An agent for skin external use, comprising:

a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester, said higher fatty acid ester of ascorbic acid-2-phosphoric acid ester being represented by the following formula (1):



Formula (1)

wherein R is a higher fatty acid residual group, and a polyhydric alcohol.

(2) The agent for skin external use as stated in (1), wherein R in the formula (1) is a residual group of an aliphatic carboxylic acid of 10 to 20 carbon atoms.

(3) The agent for skin external use as stated in (1) or  
5 (2), wherein R in the formula (1) is a residual group of lauric acid, myristic acid, palmitic acid, stearic acid, 2-hexyldecanoic acid or isostearic acid.

(4) The agent for skin external use as stated in any one of (1) to (3), wherein R in the formula (1) is a residual group  
10 of palmitic acid.

(5) The agent for skin external use as stated in any one of (1) to (3), wherein R in the formula (1) is a residual group of 2-hexyldecanoic acid.

(6) The agent for skin external use as stated in any one  
15 of (1) to (5), wherein the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester is a Na salt, a K salt, a Mg salt or a Zn salt.

(7) The agent for skin external use as stated in any one of (1) to (6), wherein the salt of higher fatty acid ester of  
20 ascorbic acid-2-phosphoric acid ester is contained in an amount of 0.01 to 20% by mass.

(8) The agent for skin external use as stated in any one of (1) to (7), wherein the polyhydric alcohol is a dihydric

alcohol of 5 or 6 carbon atoms (when the number of carbon atoms is 5 or 6, a hetero atom may be inserted in the carbon chain).

(9) The agent for skin external use as stated in (8), wherein the dihydric alcohol of 5 or 6 carbon atoms is at least one dihydric alcohol selected from the group consisting of triethylene glycol, dipropylene glycol, 3-methyl-1,3-butanediol, 1,2-pentanediol, 1,4-pentanediol, 1,5-pentanediol, 2,4-pentanediol, 2-methyl-2,4-pentanediol, 3-methyl-1,5-pentanediol, 1,2-hexanediol and 1,6-hexanediol.

10 (10) The agent for skin external use as stated in (8) or (9), wherein the dihydric alcohol of 5 or 6 carbon atoms is contained in an amount of not less than 0.05% by mass and less than 12% by mass.

(11) The agent for skin external use as stated in any one of (1) to (7), wherein the polyhydric alcohol is at least one alcohol selected from the group consisting of dihydric or higher alcohols of 2, 3, 4 or 7 or more carbon atoms (when the number of carbon atoms is 3, 4 or 7 or more, a hetero atom may be inserted in the carbon chain), and the polyhydric alcohol is contained  
20 in an amount of 12 to 90% by mass.

(12) The agent for skin external use as stated in (11), wherein the polyhydric alcohol which is a dihydric or higher alcohol of 2, 3, 4 or 7 or more carbon atoms (when the number of carbon atoms is 3, 4 or 7 or more, a hetero atom may be inserted

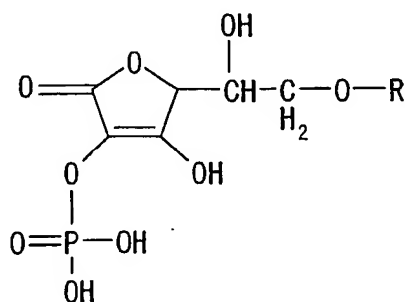


in the carbon chain) is at least one alcohol selected from the group consisting of ethylene glycol, propylene glycol, glycerin, 1,3-butanediol, diethylene glycol, polyethylene glycol, polypropylene glycol and polyglycerin.

5 (13) The agent for skin external use as stated in any one of (1) to (12), wherein water is further contained.

(14) A cosmetic comprising the agent for skin external use of any one of (1) to (13).

(15) A method for stabilizing an agent for skin external  
10 use containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester, said higher fatty acid ester of ascorbic acid-2-phosphoric acid ester being represented by the following formula (1):



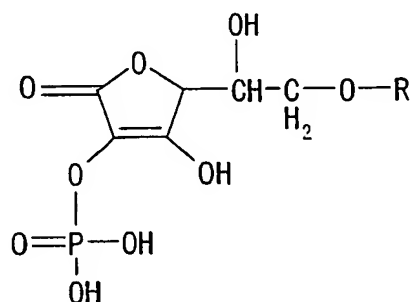
Formula (1)

15 wherein R is a higher fatty acid residual group,  
said method using a polyhydric alcohol.

(16) The method for stabilizing an agent for skin external use as stated in (15), wherein the polyhydric alcohol is a dihydric alcohol of 5 or 6 carbon atoms (when the number of carbon

atoms is 5 or 6, a hetero atom may be inserted in the carbon chain).

(17) A stabilizer for an agent for skin external use containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester, said higher fatty acid ester of ascorbic acid-2-phosphoric acid ester being represented by the following formula (1):



Formula (1)

wherein R is a higher fatty acid residual group,

10 said stabilizer comprising a polyhydric alcohol.

(18) The stabilizer for an agent for skin external use as stated in (17), wherein the polyhydric alcohol is a dihydric alcohol of 5 or 6 carbon atoms (when the number of carbon atoms is 5 or 6, a hetero atom may be inserted in the carbon chain).

15

#### PREFERRED EMBODIMENTS OF THE INVENTION

The present invention is described in detail hereinafter.

(A) Salt of higher fatty acid ester of ascorbic

20 acid-2-phosphoric acid ester

First, the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester for use in the invention is described.

The higher fatty acid ester of ascorbic acid-2-phosphoric acid ester which becomes a main structure of the salt is a compound represented by the formula (1). In the formula (1), R is a higher fatty acid residual group, namely an acyl group derived from a higher fatty acid, and the higher fatty acid is, for example, an aliphatic carboxylic acid of 10 to 20 carbon atoms. Preferred examples of the aliphatic carboxylic acids include lauric acid, myristic acid, palmitic acid, stearic acid, 2-hexyldecanoic acid and isostearic acid. Of these, palmitic acid and 2-hexyldecanoic acid are more preferable.

The salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester for use in the invention is preferably a compound wherein a phosphoric acid residual group to constitute a phosphoric acid ester linkage at the 2-position in the higher fatty acid ester of ascorbic acid-2-phosphoric acid ester, said higher fatty acid ester of ascorbic acid-2-phosphoric acid ester being a compound wherein phosphoric acid is ester linked to a hydroxyl group at the 2-position of ascorbic acid and a higher fatty acid is ester linked to a hydroxyl group at the 6-position thereof, and a base form a salt.

Preferred examples of the salts of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester include Na salts, K salts, Ca salts, Mg salts, and Zn salts. Of these, Na salts are more preferable. In the present invention, the salts of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester may be used singly or in combination of two or more kinds.

In the present invention, the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester is added so that the salt is contained in an amount of usually 0.01 to 20% by mass, preferably 0.05 to 12% by mass, more preferably 0.2 to 10% by mass, in the whole amount of the agent for skin external use. When the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester is contained in this amount in the agent for skin external use, the agent rapidly penetrates into the skin and can exhibit efficacy and effects required for agents for skin external use, so that such an amount is preferable.

#### (B) Polyhydric alcohol

In the present description, the polyhydric alcohol means a compound which is selected from alcohols having two or more hydroxyl groups in a molecule. And the polyhydric alcohol includes dihydric alcohols, trihydric alcohols, ethers of trihydric alcohols, sugar alcohols, monosaccharides and

oligosaccharides (2 - 10 saccharides).

Examples of the polyhydric alcohols include dihydric alcohols, such as ethylene glycol, propylene glycol, 1,3-butanediol, 3-methyl-1,3-butanediol, 1,2-pentanediol, 1,4-pentanediol, 1,5-pentanediol, 2,4-pentanediol, 2-methyl-2,4-pentanediol, 3-methyl-1,5-pentanediol, 1,2-hexanediol, 1,6-hexanediol, diethylene glycol, triethylene glycol, polyethylene glycol, dipropylene glycol, polypropylene and glycol; trihydric alcohols, such as glycerin; ethers of trihydric alcohols, such as diglycerin and polyglycerin; sugar alcohols, such as mannitol, sorbitol, xylitol, maltitol, erythritol and pentaerythritol; monosaccharides, such as glucose, fructose and xylose; and oligosaccharides, such as sucrose, lactose, maltose and trehalose.

Of these, one preferred example is a dihydric alcohol having 5 or 6 carbon atoms. The carbon chain to constitute the alcohol may be branched, and if the number of carbon atoms is 5 or 6, a hetero atom may be inserted in the carbon chain. That is to say, the alcohol has only to have 5 or 6 carbon atoms in all, and the carbon chain constituted of these carbon atoms may be an intermittent carbon chain having a hetero atom between the carbon atoms.

That is to say, a hetero atom may be inserted midway on the carbon chain that constitutes the alcohol, and the hetero atom is, for example, oxygen, nitrogen or sulfur.

Examples of the dihydric alcohols of 5 or 6 carbon atoms  
5 include triethylene glycol, dipropylene glycol, 3-methyl-1,3-butanediol, 1,2-pentanediol, 1,4-pentanediol, 1,5-pentanediol, 2,4-pentanediol, 2-methyl-2,4-pentanediol, 3-methyl-1,5-pentanediol, 1,2-hexanediol and 1,6-hexanediol.

Of these, preferable are 1,2-pentanediol,  
10 1,4-pentanediol, 1,5-pentanediol, 2,4-pentanediol, 1,2-hexanediol and 1,6-hexanediol, and more preferable are 1,2-pentanediol and 1,2-hexanediol.

These dihydric alcohols of 5 or 6 carbon atoms may be used singly or in combination of two or more kinds.

15 In the agent for skin external use of the invention, the dihydric alcohol of 5 or 6 carbon atoms has only to be contained in an amount suitable for inhibiting occurrence of turbidity or precipitation of the resulting agent for skin external use, and specifically, the dihydric alcohol of 5 or 6 carbon atoms  
20 is desirably contained in an amount of usually not less than 0.05% by mass and less than 12% by mass, preferably 0.5 to 11% by mass, more preferably 0.5 to 10% by mass, in the whole amount of the agent for skin external use.

By virtue of use of the specific dihydric alcohol, the amount of the alcohol can be held down to that of the above range, and therefore, a feeling in the use of the agent for skin external use is better than that in the case where other polyhydric  
5 alcohols are used.

Another preferred example is a polyhydric alcohol which is a dihydric or higher alcohol of 2, 3, 4 or 7 or more carbon atoms. The carbon chain to constitute the polyhydric alcohol may be branched, and if the number of carbon atoms is 3, 4 or  
10 7 or more, a hetero atom may be inserted in the carbon chain. That is to say, the polyhydric alcohol has only to have 2, 3, 4 or 7 or more carbon atoms in all, and if the number of carbon atoms is 3, 4 or 7 or more, the carbon chain constituted of these carbon atoms may be an intermittent carbon chain having a hetero  
15 atom between the carbon atoms.

That is to say, a hetero atom may be inserted midway on the carbon chain that constitutes the polyhydric alcohol, and the hetero atom is, for example, oxygen, nitrogen or sulfur.

Examples of the polyhydric alcohols which are dihydric  
20 or higher alcohols of 2, 3, 4 or 7 or more carbon atoms include ethylene glycol, propylene glycol, glycerin, 1,3-butanediol, diethylene glycol, polyethylene glycol, polypropylene glycol and polyglycerin.

Of these, preferable are propylene glycol, glycerin, 1,3-butanediol, diethylene glycol, polyethylene glycol and polyglycerin, and more preferable are propylene glycol and 1,3-butanediol.

5        These polyhydric alcohols which are dihydric or higher alcohols of 2, 3, 4 or 7 or more carbon atoms, may be used singly or in combination of two or more kinds.

      The polyhydric alcohol which is a dihydric or higher alcohol of 2, 3, 4 or 7 or more carbon atoms has only to be added  
10    in an amount suitable for inhibiting occurrence of turbidity or precipitation of the resulting agent for skin external use, but specifically, the polyhydric alcohol needs to be contained in an amount of 12 to 90% by mass, preferably 15 to 90% by mass, more preferably 20 to 90% by mass, in the whole amount of the  
15    agent for skin external use. When the polyhydric alcohol which is a dihydric or higher alcohol of 2, 3, 4 or 7 or more carbon atoms is contained in an amount of 12 to 90% by mass, occurrence of turbidity or precipitation of the resulting agent for skin external use with time can be effectively inhibited. If the  
20    amount of the polyhydric alcohol is less than 12% by mass, occurrence of turbidity or precipitation cannot be sufficiently inhibited in some cases, and if the amount thereof exceeds 90% by mass, occurrence of turbidity or precipitation cannot be



sufficiently inhibited in some cases either, so that such amounts are undesirable.

The concentration of the polyhydric alcohol in the agent for skin external use can be measured by a general method such as quantitative determination using gas chromatography.

(C) Other components

To the agent for skin external use of the invention, components generally used for agents for skin external use can be added in addition to the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester and the polyhydric alcohol.

Examples of such an ingredient include hydrocarbons such as ozokerite,  $\alpha$ -olefin oligomer, light isoparaffin, light liquid isoparaffin, squalene, squalane, synthetic squalane, phytosqualane, ceresin, paraffin, polyethylene powder, polybutene, microcrystalline wax, liquid isoparaffin, liquid paraffin, mineral oil and vaseline;

natural waxes such as jojoba oil, carnauba wax, candelilla wax, rice bran wax, shellac, lanolin, mink sebaceous wax, spermaceti wax, sugarcane wax, sperm whale oil, beeswax and montan wax, natural fats and fatty oils such as avocado oil, almond oil, olive oil, extra virgin olive oil, sesame seed oil, rice bran oil, rice oil, rice germ oil, corn oil, safflower oil,

- soybean oil, maize oil, rape seed oil, persic oil, palm kernel oil, palm oil, castor oil, sunflower oil, high oleic sunflower oil, grape seed oil, cotton seed oil, coconut oil, hydrogenated coconut oil, beef tallow, hydrogenated oil, horse oil, mink oil, 5 yolk oil, yolk fat oil, rose hip oil, kukui nut oil, evening primrose oil, wheat germ oil, peanut oil, Camellia jeponica oil, Camellia kissi oil, cacao butter, Japan wax, beef bone tallow, nest's-foot oil, swine tallow, equine tallow, ovine tallow, shea butter, macadamia nut oil and meadowfoam seed oil;
- 10 fatty acids such as lauric acid, myristic acid, palmitic acid, stearic acid, behenic acid, oleic acid, linoleic acid, linolenic acid,  $\gamma$ -linolenic acid, isostearic acid, 12-hydroxystearic acid, undecylenic acid and coconut oil fatty acid;
- 15 higher monohydric alcohols such as isostearyl alcohol, octyl dodecanol, hexyl decanol, cholesterol, phytosterol, lauryl alcohol, myristyl alcohol, cetyl alcohol, stearyl alcohol, oleyl alcohol, behenyl alcohol and cetostearyl alcohol;
- 20 alkylglyceryl ethers such as batyl alcohol, chimyl alcohol, serachyl alcohol and isostearyl glyceryl ether;
- esters such as isopropyl myristate, butyl myristate, isopropyl palmitate, ethyl stearate, butyl stearate, ethyl oleate, ethyl linoleate, isopropyl linoleate, cetyl caprylate,

hexyl laurate, isooctyl myristate, decyl myristate, myristyl  
myristate, cetyl myristate, octadecyl myristate, cetyl  
palmitate, stearyl stearate, decyl oleate, oleyl oleate, cetyl  
ricinoleate, isostearyl laurate, isotridecyl myristate,  
5 isocetyl myristate, isostearyl myristate, octyldodecyl  
myristate, 2-ethylhexyl palmitate, isocetyl palmitate,  
isostearyl palmitate, 2-ethylhexyl stearate, isocetyl  
stearate, isodecyl oleate, octyldodecyl oleate, octyldodecyl  
ricinoleate, ethyl isostearate, isopropyl isostearate, cetyl  
10 2-ethylhexanoate, cetostearyl 2-ethylhexanoate, stearyl  
2-ethylhexanoate, hexyl isostearate,  
ethylene glycol dioctanoate, ethylene glycol dioleate,  
propylene glycol dicaprylate, propylene glycol  
dicaprylate/dicaprate, propylene glycol dicaprate, propylene  
15 glycol dioleate, neopentyl glycol dicaprate, neopentyl glycol  
dioctanoate, glyceryl tricaprylate, glyceryl tri 2-ethyl  
hexanoate, glyceryl tricaprylate/tricaprate, glyceryl  
tricaprylate/tricaprate/tristearate, glyceryl triundecylate,  
glyceryl triisopalmitate, glyceryl triisostearate,  
20 trimethylolpropane tri 2-ethylhexanoate, trimethylolpropane  
triisostearate, pentaerythrityl tetra 2-ethylhexanoate,  
pentaerythrityl tetramyristate, pentaerythrityl  
tetraisostearate, diglyceryl tetraisostearate, octyldodecyl  
neopentanotae, isocetyl octanoate, isostearyl octanoate,

2-ethylhexyl isopelargonate, hexyldecyl  
 dimethyloctanoate, octyldodecyl dimethyloctanoate,  
 2-ethylhexyl isopalmitate, isocetyl isostearate, isostearyl  
 isostearate, octyldodecyl isostearate, lauryl lactate,  
 5 myristyl lactate, cetyl lactate, octyldodecyl lactate,  
 triethyl citrate, acetyltriethyl citrate, acetyltributyl  
 citrate, trioctyl citrate, triisocetyl citrate,  
 trioctyldodecyl citrate, diisostearyl malate, 2-ethylhexyl  
 hydroxystearate, di 2-ethylhexyl succinate, diisopropyl  
 10 adipate, diisobutyl adipate, dioctyl adipate, diheptylundecyl  
 adipate, sebacate diethyl, diisopropyl sebacate, dioctyl  
 sebacate, cholesteryl stearate, cholesteryl isostearate,  
 cholesteryl hydroxystearate, cholesteryl oleate,  
 dihydrocholesteryl oleate, phytosteryl isostearate,  
 15 phytosteryl oleate, isocetyl 12-stearoyl hydroxystearate,  
 stearyl 12-stearoyl hydroxystearate, isostearyl 12-stearoyl  
 hydroxystearate, polyoxyethylene (3) polyoxypropylene (1)  
 cetyl ether acetate, polyoxyethylene (3) polyoxypropylene (1)  
 isocetyl ether acetate, isononyl isononanoate, octyl  
 20 isononanoate, tridecyl isononanoate and isotridecyl  
 isononanoate;

silicone oils such as methyl polysiloxane, methylphenyl  
 polysiloxane, methyl hydrogen polysiloxane, methyl  
 cyclopolysiloxane, octamethyl cyclotetrasiloxane, decamethyl

cyclopentasiloxane, dodecamethyl cyclohexasiloxane,  
octamethyl trisiloxane, decamethyl tetrasiloxane,  
tetradecamethyl hexasiloxane, highly polymerized methyl  
polysiloxane,

5 dimethylsiloxane-methyl (polyoxyethylene) siloxane-methyl (polyoxypropylene) siloxane copolymer,  
dimethylsiloxane-methyl (polyoxyethylene) siloxane copolymer,  
dimethylsiloxane-methyl (polyoxypropylene) siloxane copolymer,  
dimethylsiloxane-methylcetyl oxysiloxane copolymer,  
10 dimethylsiloxane-methyl stearoxysiloxane copolymer,  
polyether modified silicone, alcohol modified silicone, alkyl  
modified silicone and amino modified silicone;

polymers such as sodium alginate, carrageenan, agar,  
furcellaran, guar gum, quince seed, Amorphophalus konjak (arum  
15 root) mannan, tamarind gum, tara gum, dextrin, starch, locust  
bean gum, gum arabic, gum ghatti, karaya gum, gum tragacanth,  
arabinogalactan, pectin, quince, chitosan, curdlan, xanthan  
gum, gellan gum, cyclodextrin, dextran, pullulan,  
microcrystalline cellulose, methyl cellulose, ethyl cellulose,  
20 hydroxyethyl cellulose, hydroxypropyl cellulose,  
hydroxypropylmethyl cellulose, carboxymethyl cellulose,  
carboxy starch, cationized cellulose, starch phosphate ester,  
cationized guar gum, carboxymethyl-hydroxypropylated guar gum,  
hydroxypropylated guar gum, albumin, casein, gelatin, sodium

polyacrylate, polyacrylic amide, carboxyvinyl polymer,  
polyethylene imine,

highly polymerized polyethylene glycol, polyvinyl  
alcohol, polyvinyl pyrrolidone, polyvinyl ether, polyacryl  
5 amide, acrylic acid polymer, methacrylic acid polymer, maleic  
acid polymer, vinylpyridine polymer, ethylene/acrylic acid  
copolymer, vinyl pyrrolidone based polymer, vinyl  
alcohol/vinyl pyrrolidone copolymer, nitrogen-substituted  
acrylamide based polymer, amino modified silicone, cationized  
10 polymer, dimethylacryl ammonium based polymer, acrylic acid  
based anion polymer, methacrylic acid based anion polymer,  
modified silicone, acrylate/methacrylate alkyl (C 10 to 30)  
copolymer and polyoxyethylene/polyoxypropylene copolymer;

monohydric alcohols such as ethanol, isopropyl alcohol,  
15 1-butanol, 2-butanol and benzyl alcohol;

anionic surfactants such as coconut oil fatty acid  
potassium, coconut oil fatty acid sodium, coconut oil fatty acid  
triethanolamine, potassium laurate, sodium laurate,  
triethanolamine laurate, potassium myristate, sodium  
20 myristate, isopropanolamine myristate, potassium palmitate,  
sodium palmitate, isopropanolamine palmitate, potassium  
stearate, sodium stearate, triethanolamine stearate,  
potassium oleate, sodium oleate, castor oil fatty acid sodium,  
zinc undecylate, zinc laurate, zinc myristate, magnesium

myristate, zinc palmitate, zinc stearate, calcium stearate,  
magnesium stearate, aluminum stearate, calcium myristate,  
magnesium myristate, aluminum dimyristate, aluminum  
isostearate, polyoxyethylene lauryl ether acetate, sodium  
5 polyoxyethylene lauryl ether acetate, polyoxyethylene  
tridecyl ether acetate, sodium polyoxyethylene tridecyl ether  
acetate, sodium stearyl lactate, sodium isostearyl lactate,  
sodium lauroyl sarcosine, coconut oil fatty acid sarcosine,  
sodium coconut oil fatty acid sarcosine, coconut oil fatty acid  
10 sarcosine triethanolamine,

lauroyl sarcosine, potassium lauroyl sarcosine, lauroyl  
sarcosine triethanolamine, oleoyl sarcosine, sodium myristoyl  
sarcosine, sodium stearyl glutamate, coconut oil fatty acid  
acyl glutamic acid, potassium coconut oil fatty acid acyl  
15 glutamate, sodium coconut oil fatty acid acyl glutamate,  
coconut oil fatty acid acyl glutamate triethanolamine,  
lauroylacyl glutamic acid, potassium lauroylacyl glutamate,  
sodium lauroylacyl glutamate, lauroylacyl glutamate  
triethanolamine, myristoylacyl glutamic acid, potassium  
20 myristoylacyl glutamate, sodium myristoylacyl glutamate,  
stearylacyl glutamic acid, potassium stearylacyl glutamate,  
disodium stearylacyl glutamate, sodium hydrogenated beef  
tallow fatty acid acyl glutamate, sodium coconut oil fatty  
acid/hydrogenated beef tallow fatty acid acyl glutamate, sodium

coconut oil fatty acid methylalanine, lauroyl methylalanine,  
sodium lauroyl methylalanine, lauroyl methylalanine  
triethanolamine, sodium myristoyl methylalanine, sodium  
lauroyl methyltaurine,  
5 potassium coconut oil fatty acid methyltaurine, sodium  
coconut oil fatty acid methyltaurine, magnesium coconut oil  
fatty acid methyltaurine, sodium myristoyl methyltaurine,  
sodium palmitoyl methyltaurine, sodium stearoyl methyltaurine,  
sodium oleoyl methyltaurine, sodium alkane sulfonate, sodium  
10 tetradecene sulfonate, sodium sulfosuccinate dioctyl,  
disodium lauryl sulfosuccinate, sodium coconut oil fatty acid  
ethyl ester sulfonate, sodium lauryl sulfate, triethanolamine  
lauryl sulfate, sodium cetyl sulfate, triethanolamine alkyl  
(11,13,15) sulfate, sodium alkyl (12,13) sulfate,  
15 triethanolamine alkyl (12,13) sulfate, alkyl (12,14,16)  
ammonium sulfate, diethanolamine alkyl (12 to 13) sulfate,  
triethanolamine alkyl (12 to 14) sulfate, triethanolamine alkyl  
(12 to 15) sulfate,  
magnesium coconut oil alkyl sulfate/triethanolamine,  
20 lauryl ammonium sulfate, potassium lauryl sulfate, magnesium  
lauryl sulfate, monoethanolamine lauryl sulfate,  
diethanolamine lauryl sulfate, sodium myristyl sulfate, sodium  
stearyl sulfate, sodium oleyl sulfate, triethanolamine oleyl  
sulfate, sodium polyoxyethylene lauryl ether sulfate,



triethanolamine polyoxyethylene lauryl ether sulfate, sodium polyoxyethylene (1) alkyl (11,13,15) ether sulfate, triethanolamine polyoxyethylene (1) alkyl (11,13,15) ether sulfate, sodium polyoxyethylene (3) alkyl (11 to 15) ether sulfate, sodium polyoxyethylene (2) alkyl (12,13) ether sulfate, sodium polyoxyethylene (3) alkyl (12 to 14) ether sulfate, sodium polyoxyethylene (3) alkyl (12 to 15) ether sulfate, sodium polyoxyethylene (2) lauryl ether sulfate, sodium polyoxyethylene (3) myristyl ether sulfate, sodium higher fatty acid alkanol amide sulfate ester, lauryl phosphate, sodium lauryl phosphate, potassium cetyl phosphate, diethanolamine cetyl phosphate, polyoxyethylene oleyl ether phosphate, polyoxyethylene lauryl ether phosphate, sodium polyoxyethylene lauryl ether phosphate, polyoxyethylene cetyl ether phosphate, sodium polyoxyethylene cetyl ether phosphate, polyoxyethylene stearyl ether phosphate, sodium polyoxyethylene oleyl ether phosphate, polyoxyethylene alkylphenyl ether phosphate, sodium polyoxyethylene alkylphenyl ether phosphate, triethanolamine polyoxyethylene alkylphenyl ether phosphate, polyoxyethylene octyl ether phosphate, polyoxyethylene (10) alkyl (12,13) ether phosphate, polyoxyethylene alkyl (12 to 15) ether phosphate, polyoxyethylene alkyl (12 to 16) ether phosphate, triethanolamine polyoxyethylene lauryl ether phosphate and

diethanolamine polyoxyethylene oleyl ether phosphate;  
cationic surfactants such as dioctylamine,  
dimethylstearylamine, trilaurylamine, diethylaminoethylamide  
stearate, lauryl trimethylammonium chloride, cetyl  
5 trimethylammonium chloride, cetyl trimethylammonium bromide,  
cetyl trimethylammonium saccharin, stearyl trimethylammonium  
chloride, alkyl (20 to 22) trimethylammonium chloride, lauryl  
trimethylammonium bromide, alkyl (16,18) trimethylammonium  
chloride, stearyl trimethylammonium bromide, stearyl  
10 trimethylammonium saccharin, alkyl (28) trimethylammonium  
chloride, di(polyoxyethylene) oleyl methylammonium (2EO)  
chloride, dipolyoxyethylene stearyl methylammonium chloride,  
polyoxyethylene (1) polyoxypropylene (25)  
diethylmethylammonium chloride, tri(polyoxyethylene) stearyl  
15 ammonium (5EO) chloride, distearyl dimethylammonium chloride,  
dialkyl (12 to 15) dimethylammonium chloride, dialkyl (12 to  
18) dimethylammonium chloride, dialkyl (14 to 18)  
dimethylammonium chloride, dicocoyl dimethylammonium chloride,  
dicetyl dimethylammonium chloride, isostearyl lauryl  
20 dimethylammonium chloride, benzalkonium chloride, myristyl  
dimethylbenzyl ammonium chloride, lauryl  
dimethyl(ethylbenzyl) ammonium chloride, stearyl  
dimethylbenzyl ammonium chloride, lauryl pyridinium chloride,  
cetyl pyridinium chloride, lauroyl cholamino formylmethyl

pyridinium chloride, stearyl cholamino formylmethyl  
pyridinium chloride, alkyl isoquinolinium bromide, methyl  
benzethonium chloride and benzethonium chloride;

ampholytic surfactants such as

5 2-alkyl-N-carboxymethyl-N-hydroxyethyl imidazolium betaine,  
alkyldiamino ethyl glycine hydrochloride, sodium  
lauryldiamino ethyl glycine, sodium undecyl hydroxyethyl  
imidazolium betaine, undecyl-N-carboxymethyl imidazolium  
betaine, disodium coconut oil fatty acid  
10 acyl-N-carboxyethyl-N-hydroxyethyl ethylenediamine, disodium  
coconut oil fatty acid  
acyl-N-carboxyethoxyethyl-N-carboxyethyl ethylenediamine,  
disodium coconut oil fatty acid  
acyl-N-carboxymethoxyethyl-N-carboxymethyl ethylenediamine,  
15 sodium laurylamino propionate, sodium laurylamino  
dipropionate, triethanolamine laurylamino propionate, sodium  
palm oil fatty acid acyl-N-carboxyethyl-N-hydroxyethyl  
ethylenediamine, betaine lauryldimethylamino acetate, betaine  
coconut oil alkyldimethylamino acetate, betaine stearyl  
20 dimethylamino acetate, sodium stearyldimethyl betaine,  
coconut oil fatty acid amidopropyl betaine, palm oil fatty acid  
amidopropyl betaine, amidopropyl acetate betaine laurate,  
amidopropyl betaine ricinoleate, stearyl dihydroxyethyl  
betaine and lauryl hydroxysulfobetaine;

nonionic surfactants such as polyoxyethylene (10) alkyl  
(12,13) ether, polyoxyethylene lauryl ether, polyoxyethylene  
cetyl ether, polyoxyethylene stearyl ether, polyoxyethylene  
oleyl ether, polyoxyethylene (3,7,12) alkyl (12 to 14) ether,  
5 polyoxyethylene tridecyl ether, polyoxyethylene myristyl  
ether, polyoxyethylene-sec-alkyl (14) ether, polyoxyethylene  
isocetyl ether, polyoxyethylene cetostearyl ether,  
polyoxyethylene (2,10,20) isostearyl ether, polyoxyethylene  
oleylcetyl ether, polyoxyethylene (20) arachyl ether,  
10 polyoxyethylene octyldodecyl ether, polyoxyethylene behenyl  
ether, polyoxyethylene octylphenyl ether, polyoxyethylene  
nonylphenyl ether, polyoxyethylene dinonylphenyl ether,  
polyoxyethylene (1) polyoxypropylene (1,2,4,8) cetyl ether,  
polyoxyethylene (5) polyoxypropylene (1,2,4,8) cetyl ether,  
15 polyoxyethylene (10) polyoxypropylene (1,2,4,8) cetyl ether,  
polyoxyethylene (20) polyoxypropylene (1,2,4,8) cetyl ether,  
polyoxyethylene polyoxypropylene lauryl ether,  
polyoxyethylene (3) polyoxypropylene (34) stearyl ether,  
polyoxyethylene (4) polyoxypropylene (30) stearyl ether,  
20 polyoxyethylene (34) polyoxypropylene (23) stearyl ether,  
polyoxyethylene polyoxypropylene cetyl ether, polyoxyethylene  
polyoxypropylene decyltetradecyl ether,

polyethylene glycol monolaurate, ethylene glycol  
monostearate, polyethylene glycol monostearate, polyethylene

glycol monooleate, ethylene glycol fatty acid ester,  
self-emulsifying ethylene glycol monostearate, diethylene  
glycol laurate, polyethylene glycol myristate, polyethylene  
glycol palmitate, diethylene glycol stearate,  
5 self-emulsifying polyethylene glycol (2) monostearate,  
polyethylene glycol isostearate, ethylene glycol dioctanoate,  
diethylene glycol dilaurate, polyethylene glycol dilaurate,  
polyethylene glycol (150) dipalmitate, ethylene glycol  
distearate, diethylene glycol distearate, polyethylene glycol  
10 distearate, ethylene glycol dioleate, polyethylene glycol  
dioleate, polyethylene glycol diricinoleate, polyoxyethylene  
(20) sorbitan monolaurate, polyoxyethylene (20) sorbitan  
monopalmitate, polyoxyethylene (6) sorbitan monostearate,  
polyoxyethylene (20) sorbitan monostearate, polyoxyethylene  
15 (20) sorbitan tristearate, polyoxyethylene (6) sorbitan  
monooleate, polyoxyethylene (20) sorbitan monooleate,  
polyoxyethylene (20) sorbitan trioleate, polyoxyethylene (20)  
coconut oil fatty acid sorbitan, polyoxyethylene (10 to 80)  
sorbitan monolaurate, polyoxyethylene sorbitan tristearate,  
20 polyoxyethylene (20) sorbitan isostearate, polyoxyethylene  
(150) sorbitan tristearate,  
polyoxyethylene castor oil, polyoxyethylene  
hydrogenated castor oil, polyoxyethylene (10) hydrogenated  
castor oil, polyoxyethylene (20) hydrogenated castor oil,

polyoxyethylene (40) hydrogenated castor oil, polyoxyethylene  
(50) hydrogenated castor oil, polyoxyethylene (60)  
hydrogenated castor oil, lipophilic glycerin monostearate,  
lipophilic glycerin monooleate, self-emulsifying glycerin  
5 monostearate, coconut oil fatty acid glyceryl, glycerin laurate,  
glyceryl myristate, glyceryl isostearate, glyceryl  
ricinoleate, glyceryl monohydroxystearate, glycerin oleate,  
glyceryl linoleate, glyceryl erucate, glyceryl behenate, wheat  
germ oil fatty acid glyceride, safflower oil fatty acid glyceryl,  
10 hydrogenated soybean fatty acid glyceryl, saturated fatty acid  
glyceride, cotton seed oil fatty acid glyceryl, monomyristate  
glyceryl monoisostearate, mono tallowate glyceride,  
monolanolin fatty acid glyceryl, glyceryl sesquioleate,  
glyceryl distearate, glyceryl diisostearate, glyceryl  
15 diarachidate,

sorbitan monolaurate, sorbitan monopalmitate, sorbitan  
monostearate, sorbitan monoisostearate, sorbitan monooleate,  
sorbitan sesquistearate, sorbitan sesquioleate, sorbitan  
tristearate, sorbitan trioleate, coconut oil fatty acid  
20 sorbitan, sorbitan isostearate, sorbitan sesquiisostearate,  
sorbitan distearate, diglyceryl isopalmitate, poly(4 to  
10)glyceryl monolaurate, poly(10)glyceryl monomyristate,  
poly(2 to 10)glyceryl monostearate, poly(2 to 10)glyceryl  
monoisostearate, poly(2 to 10)glyceryl monooleate, diglyceryl

sesquioleate, poly(2 to 10)glyceryl diisostearate, poly(6 to 10)glyceryl distearate, diglyceryl triisostearate, poly(10)glyceryl tristearate, poly(10)glyceryl trioleate, poly(2)glyceryl tetraisostearate, decaglyceryl pentastearate, 5 poly(6 to 10)glyceryl pentaoleate, poly(10)glyceryl heptastearate, decaglyceryl decastearate, poly(10)glyceryl decaoleate, concentrated poly(6)glyceryl ricinoleate, sucrose fatty acid ester, coconut oil fatty acid sucrose ester, alkyl glucoside, coconut oil alkyl dimethylamine oxide, lauryl 10 dimethylamine oxide, dihydroxyethyl lauryl dimethylamine oxide, stearyl dimethylamine oxide, oleyl dimethylamine oxide and polyoxyethylene coconut oil alkyl dimethylamine oxide;

natural surfactants such as saponin, lecithin, soybean phospholipid, hydrogenated soybean phospholipid, soybean 15 lysophospholipid, hydrogenated soybean lysophospholipid, yolk lecithin, hydrogenated yolk lysophosphatidylcholine, phosphatidylcholine, phosphatidylethanolamine, phosphatidylserine, sphingophospholipid, sphingomyelin, ganglioside, bile acid, cholic acid, deoxycholic acid, sodium 20 cholate, sodium deoxycholate, spiculisporic acid, rhamnolipid, trehalose lipid, sophorolipid and mannosyl erythritol lipid;

ultraviolet ray absorbers such as: para-aminobenzoic acid derivatives such as para-aminobenzoic acid, ethyl para-aminobenzoate, glyceryl para-aminobenzoate, amyl

para-dimethyl aminobenzoate and 2-ethylhexyl para-dimethyl aminobenzoate; cinnamic acid derivatives such as benzyl cinnamate, mono-2-ethyl hexanoate glyceryl dipara-methoxycinnamate, methyl 2,4-diisopropyl cinnamate, 5 ethyl 2,4-diisopropyl cinnamate, potassium para-methoxycinnamate, sodium para-methoxycinnamate, isopropyl para-methoxycinnamate, 2-ethylhexyl para-methoxycinnamate, 2-ethoxyethyl para-methoxycinnamate and ethyl para-ethoxycinnamate; urocanic acid derivatives such 10 as urocanic acid and ethyl urocanate; benzophenone derivatives such as 2,4-dihydroxybenzophenone, 2,2',4,4'-tetrahydroxybenzophenone, sodium 2-hydroxy-4-methoxy-5-sulfobenzophenone, 2-hydroxy-4-methoxybenzophenone-5-sulfonate, 15 2-hydroxy-4-methoxybenzophenone, 2,2'-dihydroxy-4,4'-dimethoxybenzophenone and sodium 2,2'-dihydroxy-4,4'-dimethoxy-5-sulfobenzophenone; salicylic acid derivatives such as ethylene glycol salicylate, salicylate-2-ethylhexyl, phenyl salicylate, benzyl salicylate, 20 p-tert-butylphenyl salicylate, homomenthyl salicylate and salicylate-3,3,5-trimethylcyclohexyl; 2-(2'-hydroxy-5'-methoxyphenyl)benzotriazole and 4-tert-butyl-4'-methoxybenzoyl methane; powders and color materials such as: kaolin, silicic



anhydride, magnesium aluminum silicate, sericite, talc, boron nitride, mica, montmorillonite, hemp cellulose powder, wheat starch, silk powder, maize starch; natural dyes such as nitro dyes, azo dyes, nitroso dyes, triphenylmethane dyes, xanthene  
5 dyes, quinoline dyes, anthraquinone dyes, indigo dyes, pyrene dyes, phthalocyanine dyes, flavonoid, quinone, porphyrin, water soluble annatto, sepia powder, caramel, guaiiazulene, gardenia blue, gardenia yellow, cochineal, shikonin, sodium copper chlorophyllin, paprika dye, safflower red, safflower  
10 yellow, laccaic acid and riboflavin butyrate ester; carbon black, yellow iron oxide, black iron oxide, red iron oxide, iron blue, ultramarine blue, zinc oxide, chromium oxide, titanium oxide, black titanium oxide, zirconium oxide, chromium hydroxide, alumina, magnesium oxide, barium sulfate, aluminum  
15 hydroxide, calcium carbonate, lithium cobalt titanate, manganese violet and pearl pigment;

plant extracts such as *Angelica keiskei* extract, *Uncaria gambir* extract, avocado extract, sweet hydrangea leaf extract, *Gynostemma pentaphyllum* makino extract, *Althaea officinalis*  
20 extract, *Arnica montana* extract, oil soluble *Arnica montana* extract, almond extract, aloe extract, Japanese styrax benzoin extract, *Ginkgo biloba* extract, Stinging nettle extract, *Orris* rhizome root extract, fennel extract, turmeric extract, dog rose fruit extract, *Echinacea* leaf extract, *Scutellaria* root

extract, Phellodendron bark extract, Japanese captis extract,  
barley extract, okura extract, Hypericum perforatum extract,  
oil soluble Hypericum perforatum extract, Lamium album extract,  
oil soluble Lamium album extract, Ononis spinosa root extract,  
5 Nasturtium officinale extract, orange extract, orange flower  
water, seaweed extract, persimmon tannin, pueraria root extract,  
Japanese valerian extract, cattail extract,  
Chamomile (matricaria) extract, oil soluble Chamomile  
(matricaria) extract, Chamomile (matricaria) distillate,  
10 Avena sativa (oat) kernel extract, carrot extract, oil soluble  
carrot extract, carrot oil, Artemisia capillaris extract,  
Glycyrrhiza glabra (licorice) extract, powdered Glycyrrhiza  
glabra (licorice) extract, Glycyrrhiza glabra (licorice)  
extract flavonoid, cantharides tincture, raspberry extract,  
15 kiwi extract, cinchona extract, cucumber extract, apricot  
kernel extract, quince seed extract, gardenia florida extract,  
Sasa albomarginata extract, Sophora root extract, walnut shell  
extract, Citrus paradisi (grapefruit) extract, Clematis  
vitalba leaf extract, black sugar extract, chlorella extract,  
20 mulberry bark extract, Cinnamon bark extract,

Gentian extract, Geranium herb extract, black tea extract,  
Nuphar extract, burdock root extract, oil soluble burdock root  
extract, wheat germ extract, hydrolyzed wheat powder, rice bran  
extract, fermented rice bran extract, Symphytum officinale

(comfrey) extract, Asiasarum root extract, Crocus sativus (saffron) extract, Saponaria officinalis extract, oil soluble salvia extract, Crataegus cuneata fruit extract, Zanthoxylum fruit extract, Lentinus edodes extract, powdered Lentinus edodes extract, Rehmannia root extract, Lithospermum root extract, oil soluble Lithospermum root extract, Perilla herb extract, linden extract, oil soluble Tilia europaea extract, Filipendula extract, Peony root extract, Coix lacryma-jobi extract, ginger extract, oil soluble ginger extract, ginger  
5 tincture, Acorus calamus root extract, Betula pendula (birch) extract, oil soluble Betula alba (birch) extract, Betula pendula (birch) sap, Lonicera japonica extract, Equisetum arvense extract, oil soluble Equisetum arvense extract, scordinin, stevia extract, ivy extract, Crataegus oxyacantha  
10 (whitethorn) extract, sambucus extract, Juniperus communis extract, Achillea millefolium extract, oil soluble Achillea millefolium extract, Mentha piperita (peppermint) extract, Salvia officinalis (sage) extract, oil soluble Salvia officinalis (sage) extract, Salvia officinalis (sage) water,  
15 Malva Sylvestris (mallow) extract, Apium graveolens (celery) extract, Cnidium officinale extract, Cnidium officinale water, Swertia herb extract, Glycine max (soybean) extract, Jujube extract, thyme extract, green tea extract, tea leaf dry distilled solution, tea seed extract, clove extract, Citrus

unshiu peel extract, *Camellia japonica* extract, *Centella asiatica* extract, oil soluble walnut extract, duku extract, *Terminalia sericea* extract, *Capsicum* tincture, Japanese angelica root extract, oil soluble Japanese angelica root  
5 extract,

Japanese angelica root water, *Calendula officinalis* flower extract, oil soluble *Calendula officinalis* flower extract, soymilk powder, peach seed extract, Bitter orange peel extract, *Houttuynia cordata* extract, *Solanum lycopersicum*  
10 (tomato) extract, *Potentilla tormentilla* Schrk (Rosaceae) extract, fermented soybeans extract, Ginseng extract, oil soluble Ginseng extract, *Allium sativum* (garlic) extract, wild rose extract, oil soluble wild rose extract, malt extract, malt root extract, *Ophiopogon tuber* extract, parsley extract, rye  
15 leaf juice concentrate, peppermint distillate, witch hazel distillate, witch hazel extract, rose extract, *parietaria* extract, *Isodonis japonicus* extract, *Eriobotrya japonica* leaf extract, oil soluble *Eriobotrya japonica* leaf extract, coltsfoot extract, hoelen extract, *Ruscus aculeatus* root  
20 extract, powdered *Ruscus aculeatus* root extract, grape extract, grape leaf extract, grape water, Hayflower extract, *Luffa cylindrica* fruit extract, *Luffa cylindrica* fruit water, *Carthamus tinctorius* (safflower) extract, oil soluble *Tilia platyphyllos* extract, linden distillate, *Paeonia suffruticosa*

(peony) extract, Humulus lupulus (hops) extract, oil soluble Humulus lupulus (hops) extract, pine extract, Silybum marianum (milk thistle) extract, Aesculus hippocastanum (horse chestnut) extract, oil soluble Aesculus hippocastanum (horse chestnut) extract, Sapindus mukurossi extract, Melissa officinalis (balm mint) extract, Melilotus officinalis (melilot) extract, Prunus persica (peach) leaf extract, oil soluble Prunus persica (peach) leaf extract, bean sprouts extract, Centaurea cyanus flower extract, Centaurea cyanus flower distillate, Eucalyptus globulus extract, Saxifrage extract, Lilium (lily) extract, Coix seed extract, oil soluble Coix seed extract, Artemisia princeps pampanini extract, Artemisia princeps pampanini water, Lavandula angustifolia (lavender) extract, Lavandula angustifolia (lavender) water, apple extract, Ganoderma lucidum extract, Lactuca sativa (lettuce) extract, lemon extract, Astragalus sinicus extract, Rosa centifolia (rose) flower water, Rosemarinus officinalis (rosemary) extract, oil soluble Rosemarinus officinalis (rosemary) extract, Anthemis nobilis extract and Sanguisorba officinalis extract;

amino acids and peptides such as glycine, alanine, valine, leucine, isoleucine, serine, threonine, phenylalanine, tyrosine, tryptophan, cystine, cysteine, methionine, proline, hydroxyproline, aspartic acid, asparagine, glutamic acid,

glutamine, arginine, histidine, lysine,  $\gamma$ -aminobutyric acid,  
DL-pyrrolidonecarboxylic acid,  $\epsilon$ -aminocaproic acid,  
hydrolyzed elastin, water soluble elastin, hydrolyzed collagen,  
water soluble collagen, casein, glutathione, wheat peptides and  
5 soybean peptide;

vitamins and factors acting like a vitamin such as:  
vitamin A and analogues thereof such as retinol, retinal,  
retinoic acid, retinol acetate and retinol palmitate;  
carotenoids such as  $\alpha$ -carotene,  $\beta$ -carotene,  $\gamma$ -carotene,  
10  $\delta$ -carotene, lycopene, zeaxanthin, cryptoxanthin, echinenon and  
astaxanthin; vitamin B<sub>1</sub> and analogues thereof such as thiamines;  
vitamin B<sub>2</sub> and analogues thereof such as riboflavin; vitamin  
B<sub>6</sub> and analogues thereof such as pyridoxine, pyridoxal and  
pyridoxamine; vitamin B<sub>12</sub> and analogues thereof such as  
15 cyanocobalamin; folic acids, nicotinic acid, nicotinamide,  
pantothenic acids, biotins; vitamin C and analogues thereof  
such as L-ascorbic acid, sodium L-ascorbate, L-ascorbyl  
stearate, L-ascorbyl palmitate, L-ascorbyl dipalmitate,  
L-ascorbyl tetraispalmitate, L-ascorbate sulfate disodium  
20 ester, magnesium L-ascorbyl phosphate, sodium L-ascorbyl  
phosphate and L-ascorbate-2-glucoside; vitamin D and analogues  
thereof such as ergocalciferol and cholecalciferol; vitamin E  
and analogues thereof such as d- $\alpha$ -tocopherol, DL- $\alpha$ -tocopherol,  
dl- $\alpha$ -tocopherol acetate, dl- $\alpha$ -tocopherol succinate,

$\beta$ -tocopherol,  $\gamma$ -tocopherol and d- $\delta$ -tocopherol; ubiquinones, vitamin K and analogues thereof, carnitine, ferulic acid,  $\gamma$ -oryzanol,  $\alpha$ -lipoic acid and orotic acid;

antiseptic agents such as benzoic acid, sodium benzoate,  
5 undecylenic acid, salicylic acid, sorbic acid, potassium sorbate, dehydroacetic acid, sodium dehydroacetate, isobutyl parahydroxybenzoate, isopropyl parahydroxybenzoate, ethyl parahydroxybenzoate, butyl parahydroxybenzoate, propyl parahydroxybenzoate, benzyl parahydroxybenzoate, methyl  
10 parahydroxybenzoate, sodium parahydroxybenzoate methyl, phenoxyethanol, light sensitive dye No. 101, light sensitive dye No. 201 and light sensitive dye No. 401;

antioxidizing agents such as butylhydroxyanisole, butylhydroxytoluene, propyl gallate, erythorbic acid, sodium  
15 erythorbate, para-hydroxyanisole and octyl gallate;

chelating agents to bind to a metal ion such as trisodium ethylenediamine hydroxyethyl triacetate, edetic acid, disodium edetate, trisodium edetate, tetrasodium edetate, sodium citrate, gluconic acid, phytic acid, sodium  
20 polyphosphate and sodium metaphosphate;

moisturizing agents such as hyaluronic acid, sodium hyaluronate, sodium chondroitin sulfate, sodium lactate, sodium pyrrolidone carboxylate, betaine, lactic acid bacteria fermented solution, yeast extract and ceramide;

anti-inflammatory agents such as glycyrrhizic acid, trisodium glycyrrhizinate, dipotassium glycyrrhizinate, monoammonium glycyrrhizinate,  $\beta$ -glycyrrhetinic acid, glycerin glycyrrhetinate, stearyl glycyrrhetinate, lysozyme chloride,  
5 hydrocortisone and allantoin;

pH adjusting agents such as sodium hydroxide, potassium hydroxide and triethanolamine;

salts such as sodium chloride, potassium chloride, magnesium chloride and sodium sulfate;

10  $\alpha$ -hydroxy acids such as citric acid, glycolic acid, tartaric acid and lactic acid;

whitening agents such as arbutin,  $\alpha$ -arbutin and placenta extract;

essential oils such as *Archangelica officinalis*  
15 (*angelica*) oil, *Canangium odoratum* (*ylang ylang*) oil, *Canarium luzonicum* (*elemi*) oil, orange oil, *Chamomilla recutita* (*matricaria*) oil, *Anthemis nobilis* oil, *Elettaria cardamom* (*cardamon*) oil, *Acorus calamus* (*calamus*) oil, *Ferula galbaniflua* (*galbanum*) oil, *Cinnamomum camphora* (*camphor*) oil,  
20 *Daucus carota* (*carrot*) seed oil, *Salvia sclarea* (*clary sage*) oil, *Citrus paradisi* (*grapefruit*) oil, *Eugenia caryophyllus* (*clove*) oil, *Cinnamomum bark* oil, *Coriandrum sativum* (*coriander*) oil, *Cupressus sempervirens* (*cypress*) oil, *Santalum album* (*sandalwood*) oil, *Juniperus virginiana* (*cedarwood*) oil,



Cympogon nardus (citronella) oil, Cinnamomum zeylanicum (Cinnamon) leaf oil, Jasmine officinale (jasmine) absolute oil, Juniperus communis (juniper Berry) oil, Zingiber officinale (ginger) extract, Mentha spicata (spearmint) oil, Salvia officinalis (sage) oil, cedar oil, Pelargonium graveolens (geranium) oil, Thymus vulgaris (thyme) oil, Melaleuca alternifolia (tea tree) oil, Myristica fragrans (nutmeg) oil, Melaleuca qu. viridiflora (niaouli) oil, Citrus aurantium (neroli) oil, pine oil, Ocimum basilicum (basil) oil, Mentha arvensis oil, Pogostemon patchouli (patchouli) oil, Cymbopogon martini (palmarosa) oil, Foeniculum vulgare (fennel) oil, Citrus bigaradia (petitgrain) oil, Piper nigrum (black pepper) oil, Boswellia carterii (frankincense) oil, Vetiveria zizanioides (vetiver) oil, Mentha piperita (peppermint) oil, Citrus bergamia (bergamot) oil, benzoin oil, Aniba rosaeodora (bois de rose) oil, Origanum majorana (marjoram) oil, mandarin oil, Conumiphora myrrha (myrrh) oil, Melissa officinalis (balm mint) oil, Eucalyptus globulus oil, Citrus junos oil, Citrus aurantifolia (lime) oil, Ravensara aromaticum (ravensara) oil, Lavandula latifolia (lavandin) oil, Lavandula angustifolia (lavender) oil, Tilia vulgaris (linden) oil, lemon oil, lemon grass oil, rose oil, Aniba rosaeodora (rosewood) oil, Rosemarinus officinalis (rosemary) oil and Levisticum officinale (lovage) oil;

terpenes such as limonene, pinene, terpinene, terpinolene, myrcene and longifeelene;

fragrance, water, and the like.

The above components can be contained in the agent for skin external use within limits not detrimental to the effects of the present invention, and they can be contained in amounts of usually 0.01 to 90% by mass, preferably 0.1 to 25% by mass, more preferably 0.3 to 10% by mass, in the whole amount of the agent for skin external use.

10

Agent for skin external use, cosmetic

The agent for skin external use of the invention contains the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester and the polyhydric alcohol, and can further contain the aforesaid other components when needed. The most embodiments of the agent for skin external use of the invention are cosmetics. In the present description, the term "cosmetics" is used in a broad sense including skin milk, skin cream, foundation cream, massage cream, cleansing cream, shaving cream, cleansing foam, skin toner, lotion, pack, shampoo, rinse, hair glowing agent, hair tonic, hair dye, hair treatment agent, tooth paste, gargle, permanent waving agent, ointment, bath agent, body soap, etc., irrespective of the categories, provided that they are brought into contact with

the skin when used. Further, the term "cosmetics" is used in a broad sense irrespective of age or sex of users.

When the agent for skin external use of the invention is a cosmetic, substances generally employable for cosmetics, which are selected from the aforesaid other components (C), can be employed, and in addition thereto, the existing cosmetic materials other than the components (C) can be further employed.

For example, there can be employed all the cosmetic materials described in "The Japanese Standards of Cosmetic Ingredients, 2nd Edition Annotation", edited by Society of Japanese Pharmacopoeia, 1984 (Yakuji Nippo, Ltd.), "The Japanese Cosmetic Ingredients Codex", supervised by the Ministry of Health and Welfare, Pharmaceutical Affairs Bureau, Evaluation and Licensing Division, 1993 (Yakuji Nippo, Ltd.), "Supplement to the Japanese Cosmetic Ingredients Codex", supervised by the Ministry of Health and Welfare, Pharmaceutical Affairs Bureau, Evaluation and Licensing Division, 1993 (Yakuji Nippo, Ltd.), "The Comprehensive Licensing Standards of Cosmetics by Category", supervised by the Ministry of Health and Welfare, Pharmaceutical Affairs Bureau, Evaluation and Licensing Division, 1993 (Yakuji Nippo, Ltd.), "The Japanese Cosmetic Compounding Ingredients by Category", supervised by the Ministry of Health and Welfare, Pharmaceutical Affairs Bureau, Evaluation and Licensing

Division, 1997 (Yakuji Nippo, Ltd.), and "Cosmetic Material Dictionary", 1991 (Nikko Chemicals).

These cosmetic materials can be contained in such amounts that the total of these materials and the aforesaid other  
5 components (C) is in the range of 0.01 to 90% by mass, preferably 0.1 to 25% by mass, more preferably 0.3 to 10% by mass, in the whole amount of the cosmetic.

The agent for skin external use and the cosmetic of the invention can be prepared by dissolving, mixing or dispersing  
10 the above components in given amounts in accordance with a conventional process corresponding to its embodiment.

Method for stabilizing agent for skin external use containing  
salt of higher fatty acid ester of ascorbic acid-2-phosphoric  
15 acid ester, and stabilizer

In the agent for skin external use of the invention, a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester and a polyhydric alcohol are both contained, as described above, and therefore, occurrence of turbidity or  
20 precipitation with time can be inhibited even when the agent for skin external use is prepared using the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester.

In other words, by the use of a polyhydric alcohol as a stabilizer to allow the polyhydric alcohol and the salt of higher

fatty acid ester of ascorbic acid-2-phosphoric acid ester to be present together in the agent for skin external use, the agent for skin external use containing the salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester can be  
5 stabilized. Accordingly, the polyhydric alcohol can be favorably used as a stabilizer for the agent for skin external use containing a salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester.

10

#### EFFECTS OF THE INVENTION

According to the present invention, occurrence of turbidity or precipitation with time can be prevented to enhance stability even when the agent for skin external use is prepared using a specific salt of higher fatty acid ester of ascorbic  
15 acid-2-phosphoric acid ester. Accordingly, the present invention is useful for all agents for skin external use, particularly cosmetics.

#### EXAMPLES

20

The present invention is further described with reference to the following examples, but it should be construed that the invention is in no way limited to those examples.

As the glycerin described below, glycerin having a glycerin content of not less than 98% by mass was used. The

unit of numerals in the tables is % by mass and total of the components in the tables is 100 % by mass.

In the examples, evaluation of turbidity and precipitation was carried out based on the following criteria.

5 (1) Evaluation of turbidity

Occurrence of turbidity was visually observed and evaluated based on the following criteria.

-: Occurrence of turbidity is not observed at all.

±: Occurrence of turbidity is slightly observed.

10 +: Occurrence of turbidity is conspicuous.

(2) Evaluation of precipitation

Occurrence of precipitation was visually observed and evaluated based on the following criteria.

-: Occurrence of precipitation is not observed at all.

15 ±: Occurrence of precipitation is slightly observed.

+: Occurrence of precipitation is conspicuous.

Examples 1-4 and Comparative Example 1

The components 1 to 6 shown in Table 1 were homogeneously  
20 blended in a blending ratio shown in Table 1, then stirred and dissolved to obtain a lotion. The resulting lotion was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the

above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the lotion was allowed to stand still at 40°C for 1 month are set forth in Table 1.

5 It can be seen from Table 1 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the lotion was enhanced in Examples 1 to 4 as compared with those in Comparative Example 1.

Table 1

		Comp. Ex. 1	Ex. 1	Ex. 2	Ex. 3	Ex. 4
1	Ascorbic acid-2-phosphoric acid-6-palmitic acid sodium salt	2	2	2	2	2
2	Citric acid	0.08	0.08	0.08	0.08	0.08
3	Ethanol	5	5	5	5	5
4	Propylene glycol	-	5	10	12	15
5	Methyl para-hydroxybenzoate	0.2	0.2	0.2	0.2	0.2
6	Purified water	Rest	Rest	Rest	Rest	Rest
Turbidity		+	±	±	-	-
Precipitation		-	-	-	-	-

10

In Example 1 and Comparative Example 1, the propylene glycol concentration was determined as follows by gas chromatography.

A sample of 1 g was diluted with acetone to give a 10 ml  
 15 of a sample solution. Then, a calibration curve of a standard solution of propylene glycol was made from a gas chromatogram, and from the calibration curve, the amount of propylene glycol

in the sample solution was determined. The conditions of gas chromatography are as follows.

Apparatus: HP6890

Column: J&W Scientific DB-1 (inner diameter: 0.32 mm,  
5 length: 30 m, film thickness: 5  $\mu$ m)

Column oven temperature: 50°C (1 minute), heating at  
20°C/minute, 320°C (10 minutes)

Carrier gas: He

Column flow rate: 1.5 ml/minute

10 Injection mode: split (1:50)

Injection quantity: 1  $\mu$ l

FID temperature: 320°C

As a result, the propylene glycol concentrations in  
Example 1 and Comparative Example 1 were 5% by mass and 0% by  
15 mass, respectively.

#### Examples 5-9 and Comparative Example 2

The components 1 to 5 shown in Table 2 were homogeneously  
blended in a blending ratio shown in Table 2, then stirred and  
20 dissolved to obtain a lotion. The resulting lotion was allowed  
to stand still at 40°C for 1 month, the evaluation of occurrence  
of turbidity and precipitation with time was performed. The  
evaluation was performed by visual observation based on the  
above criteria. The results of the evaluation of occurrence



of turbidity and precipitation performed after the lotion was allowed to stand still at 40°C for 1 month are set forth in Table 2.

It can be seen from Table 2 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the lotion was enhanced in Examples 5 to 9 as compared with those in Comparative Example 2.

Table 2

		Comp. Ex. 2	Ex. 5	Ex. 6	Ex. 7	Ex. 8	Ex. 9
1	Ascorbic acid-2-phosphoric acid-6-palmitic acid sodium salt	0.7	2	2	2	2	2
2	Citric acid	0.03	0.08	0.08	0.08	0.08	0.08
3	Glycerin	-	5	10	15	90	95
4	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1	0.1	0.1
5	Purified water	Rest	Rest	Rest	Rest	Rest	Rest
	Turbidity	+	±	±	-	-	±
	Precipitation	-	-	-	-	-	-

#### 10 Examples 10-12 and Comparative Example 3

The components 1 to 10 shown in Table 3 were homogeneously blended in a blending ratio shown in Table 3, then stirred and dissolved to obtain a lotion. The resulting lotion was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the lotion was

allowed to stand still at 40°C for 1 month are set forth in Table 3.

It can be seen from Table 3 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the lotion was enhanced in Examples 10 to 12 as compared with those in Comparative Example 3.

Table 3

		Comp. Ex. 3	Ex.10	Ex.11	Ex.12
1	Ascorbic acid-2-phosphoric acid-6-palmitic acid sodium salt	1	1	1	1
2	Ethanol	4	4	4	4
3	Propylene glycol	-	15	-	-
4	1,3-Butanediol	-	-	15	-
5	Dipropylene glycol	-	-	-	15
6	Trehalose	-	0.05	0.05	0.05
7	Citric acid	0.2	0.2	0.2	0.2
8	Sodium citrate	0.2	0.2	0.2	0.2
9	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1
10	Purified water	Rest	Rest	Rest	Rest
	Turbidity	+	-	-	-
	Precipitation	-	-	-	-

#### 10 Examples 13-15 and Comparative Example 4

The components 1 to 10 shown in Table 4 were homogeneously blended in a blending ratio shown in Table 4, then stirred and dissolved to obtain a lotion. The resulting lotion was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the

above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the lotion was allowed to stand still at 40°C for 1 month are set forth in Table 4.

- 5 It can be seen from Table 4 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the lotion was enhanced in Examples 13 to 15 as compared with those in Comparative Example 4.

Table 4

		Comp. Ex. 4	Ex.13	Ex.14	Ex.15
1	Ascorbic acid-2-phosphoric acid-6-(2-hexyldecanoic acid) sodium salt	1	1	1	1
2	Ethanol	4	4	4	4
3	Propylene glycol	-	15	-	-
4	1,3-Butanediol	-	-	15	-
5	Dipropylene glycol	-	-	-	15
6	Trehalose	-	0.05	0.05	0.05
7	Citric acid	0.2	0.2	0.2	0.2
8	Sodium citrate	0.2	0.2	0.2	0.2
9	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1
10	Purified water	Rest	Rest	Rest	Rest
	Turbidity	+	-	-	-
	Precipitation	-	-	-	-

10

#### Examples 16-21 and Comparative Example 5

The components 1 to 10 shown in Table 5 were homogeneously blended in a blending ratio shown in Table 5, then stirred and dissolved to obtain an essence. The resulting essence was  
 15 allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was

performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the essence was allowed to stand still at 40°C for 1 month are set forth in Table 5.

It can be seen from Table 5 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the essence was enhanced in Examples 16 to 21 as compared with those in Comparative Example 5.

10 Table 5

		Comp. Ex. 5	Ex.16	Ex.17	Ex.18	Ex.19	Ex.20	Ex.21
1	Ascorbic acid-2-phosphoric acid-6-stearic acid sodium salt	3	3	3	3	3	3	3
2	1,3-Butanediol	-	5	6	7.5	15	10	10
3	Glycerin	-	3	3.6	4.5	9	8	16
4	Propylene glycol	-	2	2.4	3	6	1	4
5	Sodium hyaluronate	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6	Ethanol	3	3	3	3	3	3	3
7	Hydroxyethyl cellulose	0.1	0.1	0.1	0.1	0.1	0.1	0.1
8	Polyethylene glycol(60) hydrogenated castor oil	0.1	0.1	0.1	0.1	0.1	0.1	0.1
9	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10	Purified water	Rest	Rest	Rest	Rest	Rest	Rest	Rest
	Turbidity	+	±	-	-	-	-	-
	Precipitation	±	±	-	-	-	-	-

#### Examples 22-27 and Comparative Example 6

The components 1 to 10 shown in Table 6 were homogeneously blended in a blending ratio shown in Table 6, then stirred and dissolved to obtain an essence. The resulting essence was

allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the essence was allowed to stand still at 40°C for 1 month are set forth in Table 6.

It can be seen from Table 6 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the essence was enhanced in Examples 22 to 27 as compared with those in Comparative Example 6.

Table 6

		Comp. Ex. 6	Ex. 22	Ex. 23	Ex. 24	Ex. 25	Ex. 26	Ex. 27
1	Ascorbic acid-2-phosphoric acid-6-isostearic acid sodium salt	3	3	3	3	3	3	3
2	1,3-Butanediol	-	5	6	7.5	15	10	10
3	Glycerin	-	3	3.6	4.5	9	8	16
4	Propylene glycol	-	2	2.4	3	6	1	4
5	Sodium hyaluronate	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6	Ethanol	3	3	3	3	3	3	3
7	Hydroxyethyl cellulose	0.1	0.1	0.1	0.1	0.1	0.1	0.1
8	Polyethylene glycol (60) hydrogenated castor oil	0.1	0.1	0.1	0.1	0.1	0.1	0.1
9	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1	0.1	0.1	0.1
10	Purified water	Rest	Rest	Rest	Rest	Rest	Rest	Rest
	Turbidity	+	±	-	-	-	-	-
	Precipitation	±	±	-	-	-	-	-

Examples 28-33 and Comparative Example 7

The components 1 to 8 shown in Table 7 were homogeneously blended in a blending ratio shown in Table 7, then stirred and dissolved to obtain a lotion. The resulting lotion was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the lotion was allowed to stand still at 40°C for 1 month are set forth in Table 7.

It can be seen from Table 7 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the lotion was enhanced in Examples 28 to 33 as compared with those in Comparative Example 7.

Table 7

		Comp. Ex. 7	Ex. 28	Ex. 29	Ex. 30	Ex. 31	Ex. 32	Ex. 33
1	Ascorbic acid-2-phosphoric acid-6-palmitic acid sodium salt	1	1	1	1	1	1	1
2	1,2-Pentanediol	-	0.1	1	5	-	-	-
3	1,2-Hexanediol	-	-	-	-	0.1	1	5
4	Trehalose	-	0.05	0.05	0.05	0.05	0.05	0.05
5	Citric acid	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6	Sodium citrate	0.2	0.2	0.2	0.2	0.2	0.2	0.2
7	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1	0.1	0.1	0.1
8	Purified water	Rest	Rest	Rest	Rest	Rest	Rest	Rest
	Turbidity	+	-	-	-	-	-	-
	Precipitation	-	-	-	-	-	-	-

Examples 34-39 and Comparative Example 8

The components 1 to 8 shown in Table 8 were homogeneously blended in a blending ratio shown in Table 8, then stirred and dissolved to obtain a lotion. The resulting lotion was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the lotion was allowed to stand still at 40°C for 1 month are set forth in Table 8.

It can be seen from Table 8 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the lotion was enhanced in Examples 34 to 39 as compared with those in Comparative Example 8.

Table 8

		Comp. Ex. 8	Ex. 34	Ex. 35	Ex. 36	Ex. 37	Ex. 38	Ex. 39
1	Ascorbic acid-2-phosphoric acid-6-(2-hexyldecanoic acid) sodium salt	1	1	1	1	1	1	1
2	1,2-Pentanediol	-	0.1	1	5	-	-	-
3	1,2-Hexanediol	-	-	-	-	0.1	1	5
4	Trehalose	-	0.05	0.05	0.05	0.05	0.05	0.05
5	Citric acid	0.2	0.2	0.2	0.2	0.2	0.2	0.2
6	Sodium citrate	0.2	0.2	0.2	0.2	0.2	0.2	0.2
7	Methyl para-hydroxybenzoate	0.1	0.1	0.1	0.1	0.1	0.1	0.1
8	Purified water	Rest	Rest	Rest	Rest	Rest	Rest	Rest
Turbidity		+	-	-	-	-	-	-
Precipitation		-	-	-	-	-	-	-

Examples 40-41 and Comparative Example 9

The components 1 to 9 shown in Table 9 were homogeneously blended in a blending ratio shown in Table 9, then stirred and dissolved to obtain an essence. The resulting essence was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the essence was allowed to stand still at 40°C for 1 month are set forth in Table 9.

It can be seen from Table 9 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the essence was enhanced in Examples 40 to 41 as compared with those in Comparative Example 9.

Table 9

		Comp. Ex. 9	Ex. 40	Ex. 41
1	Ascorbic acid-2-phosphoric acid-6-palmitic acid sodium salt	1	2	2
2	1,2-Pentanediol	-	8	-
3	1,2-Hexanediol	-	-	8
4	Sodium hyaluronate	0.2	0.2	0.2
5	Polyethylene glycol (60) hydrogenated castor oil	0.1	0.1	0.1
6	Hydroxyethyl cellulose	0.1	0.1	0.1
7	Methyl para-hydroxybenzoate	0.1	0.1	0.1
8	Phenoxyethanol	0.02	0.02	0.02
9	Purified water	Rest	Rest	Rest
	Turbidity	+	-	-
	Precipitation	±	-	-



Examples 42-43 and Comparative Example 10

The components 1 to 9 shown in Table 10 were homogeneously blended in a blending ratio shown in Table 10, then stirred and dissolved to obtain an essence. The resulting essence was allowed to stand still at 40°C for 1 month, the evaluation of occurrence of turbidity and precipitation with time was performed. The evaluation was performed by visual observation based on the above criteria. The results of the evaluation of occurrence of turbidity and precipitation performed after the essence was allowed to stand still at 40°C for 1 month are set forth in Table 10.

It can be seen from Table 10 that occurrence of turbidity and precipitation was more effectively inhibited and stability of the essence was enhanced in Examples 42 to 43 as compared with those in Comparative Example 10.

Table 10

		Comp. Ex.10	Ex.42	Ex.43
1	Ascorbic acid-2-phosphoric acid-6-(2-hexyldecanoic acid) sodium salt	1	2	2
2	1,2-Pentanediol	-	8	-
3	1,2-Hexanediol	-	-	8
4	Sodium hyaluronate	0.2	0.2	0.2
5	Polyethylene glycol(60) hydrogenated castor oil	0.1	0.1	0.1
6	Hydroxyethyl cellulose	0.1	0.1	0.1
7	Methyl para-hydroxybenzoate	0.1	0.1	0.1
8	Phenoxyethanol	0.02	0.02	0.02
9	Purified water	Rest	Rest	Rest
	Turbidity	+	-	-
	Precipitation	±	-	-

### INDUSTRIAL APPLICABILITY

According to the present invention, occurrence of turbidity or precipitation with time can be prevented to enhance stability even when the agent for skin external use is prepared using a specific salt of higher fatty acid ester of ascorbic acid-2-phosphoric acid ester. Therefore, the present invention is useful for all agents for skin external use, particularly cosmetics.